

Abstract

Raspberry fruit is a highly perishable commodity due to high respiration rate and fragile structure. These characteristics make the fruit an easy target for fungal postharvest diseases that can destroy the fruit's value. To keep raspberry fruit fresh and in salable condition after harvest requires knowledge of fruit physiological characteristics, packaging, and postharvest technology.

Experiments were conducted in 1992 and 1993 in order to enhance our understanding of raspberry fruit physiology and postharvest characteristics. Raspberry fruit was subjected to different temperatures, packaging types, yeasts, and fungicides treatments, as well as to direct exposure to ethylene gas, precursors and inhibitors of this plant hormone. Raspberry fruit was stored at 4 °C and 22 °C in heat-sealed, low-density polyethylene bags (LDPE) and in open trays. Raspberry fruit was sprayed with several commercial and unknown yeasts (isolated from raspberry fruit surface) to test these natural occurring antagonists for their biocontrol potential against postharvest fungal diseases. Respiration gases and ethylene were measured to evaluate fruit response to these treatments. Soluble solids, pH, and disease incidence and severity were also evaluated.

Raspberry did not show a response to ethylene applications in fruit postharvest behavior, but the differences found among raspberry cultivars in ethylene production may be more important.

Raspberry fruit respiration and ethylene production did not change in response to the yeast applications. Fruit pH increased and soluble solids decreased with time of storage. Disease incidence and severity increased with time of storage and disease development occurred more rapidly at high temperatures. Temperature and type of package influenced the response to yeast treatments imposed on the fruit. Yeast treatments, mainly yeast 1993-33 (Ascomycetes), were as effective or more effective than chemical fungicides in control of postharvest fungal diseases. Yeast as a biocontrol agent has some potential when properly combined with low temperature (4 °C) and package (LDPE bags).

Yeasts collected and isolated from raspberry fruit were characterized to several choices of genera. Yeasts from the Class Ascomycetes were isolated and were more effective as fungal disease biocontrol agents on raspberry fruit than Basidiomycete yeasts.